

REMARKS

Claims 1, 7, 8 and 14 currently appear in this application. The Office Action of February 15, 2007, has been carefully studied. These claims define novel and unobvious subject matter under Sections 102 and 103 of 35 U.S.C., and therefore should be allowed. Applicant respectfully requests favorable reconsideration, entry of the present amendment, and formal allowance of the claims.

Amendments to the Claims

Claim 1 has been amended by incorporating into claim 1 the limitations of claims 2-4. Furthermore, "an organic dye compound" has been further limited to one "having an absorption maximum at a wavelength of more than 40 nm longer than 450 nm." As described in the specification as filed at page 13, lines 18-22, dye compounds represented by Chemical Formulae 20-38 have an absorption maximum in the regions with wavelengths longer than 450 nm. In fact, as shown in the Table attached hereto, the organic dye compounds represented by Chemical Formulae 19 to 38 have an absorption maximum "at a wavelength of more than 40 nm longer than 450 nm."

Claims 2-4 have been cancelled, as their subject matter has been incorporated into claim 1.

Claim 8 has been amended in a manner similar to claim 1, *i.e.*, the subject matter of claims 9-11 has been incorporated into claim 8, and "an organic dye compound" has been further limited to one "having an absorption maximum at a wavelength of more than 40 nm longer than 450 nm."

Art Rejections

Claims 1 and 8 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Ohgo et al., US 6,269,072 as evidenced by Mills, *J. Chem. Soc.* Pp. 455-466, 1922. The Examiner states that Ohgo teaches an optical recording medium in embodiment 8, where a grooved substrate is coated with a gold reflective layer and a recording layer of monomethine benzothiazine dye where R are C₁₋₃ alkyl moieties and then a protective layer formed as in embodiment 1. Mills is said to teach that 2,2'-diethylthiocyanaine iodide has two absorption maxima: the stronger at 423 nm and the weaker at 400 nm.

This rejection is respectfully traversed. Claims 1 and 8 have been amended to include the limitations of claims 2-4 and 9-11, respectively. As none of claims 2-4 or 9-11 has been rejected as being anticipated by Ohgo, it is respectfully submitted that the amendments to claims 1 and 8 have overcome this rejection.

Claims 1, 2, 7-9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohgo in view of Mills and Nanba et al., JP 60-204396. The Examiner states that Nanba discloses an example (Example 3) in which dye D36 has an absorption maximum at 880 nm, which is greater than the wavelength of writing light of 830 nm, and that the dye is used with dye D32 and metal chelate Q3-12. The Examiner further states that the use of dyes which have an absorption maximum within the range of 40 nm shorter and 70 nm longer than the writing wavelength is disclosed in the abstract of Nanba. Nanba is said to disclose at page 28, the use of lasers including HeNe (632.8 nm), argon ion (488, 514.5 nm), HeCd (442 and 325 nm). The Examiner's position is that it would have been obvious to modify the Ohgo medium by using other counter ions, such as the perchlorate, tetrafluoroborate or aryl sulfonic acids disclosed by Nanba as equivalent to iodate in the right column of page 8 with a reasonable expectation of forming a useful optical recording medium.

This rejection is respectfully traversed. Since the dyes in Nanba have absorption maxima within the range of 40 nm shorter and 70 nm longer than the writing wavelength, the absorption maximum of dye D36 must be in the range of 790 nm (*i.e.*, 830 nm - 40 nm) to 900 nm (*i.e.*, 830 nm + 70 nm). That means that dye D36 cannot be used in an optical recording

medium in which information is written with HeNe (632.8 nm), argon ion (48, 514.4 nm) or HeCd (442 and 325) lasers, because the absorption maximum of dye D36 is not within the range of 40 nm shorter and 70 nm longer than the wavelengths of these lasers. In other words, Nanba teaches that dye D36 cannot be used in the herein claimed optical recording medium, which uses a laser with an oscillation wavelength of about 405 nm.

There is nothing in the combination of Ohgo, Mills and Nanba that teaches an optical recording medium as claimed herein, which optical recording medium:

- i. Uses a laser with an oscillation wavelength of about 405 nm as writing light;
- ii. Uses an organic dye compound having an absorption maximum at a wavelength of more than 40 nm longer than 450 nm,
- iii. Has a recording capacity of over 15 GB per side when formed into a disc 12 cm in diameter,
- iv. Writes information by forming minute pits with a pit/groove width of below 1 micron/pit at a track pitch of below 1 micron, and
- v. Uses an organic dye compound represented by any one of Formulae 1 to 3 and includes a light-resistant improver.

Accordingly, it is respectfully submitted that claims 1, 7, 8 and 14 as amended define patentable subject matter, and allowance of these claims is respectfully requested.

Claims 1, 2, 4, 7-9, 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al., JP 11-053758 and Usami et al., US 6,341,122 in view of Nanba. The Examiner has suggested that this rejection could be obviated by reciting that the dyes have an absorption maximum at a wavelength of 450 nm or more and are able to be recorded with wavelengths in the 380-405 nm range.

Claims 1 and 8 have been amended in accordance with the Examiner's helpful suggestion. Claims 1 and 8 are now limited to organic dye compounds "having an absorption maximum at a wavelength of more than 40 nm longer than 450 nm." As to the wavelength of writing light, claims 1 and 8 already recite that "information is recorded by using a laser with an oscillation wavelength of about 405 nm."

As shown in the Table submitted herewith, the organic compounds represented by Chemical Formulae 19 to 38, which read on any one of Formulae 1 to 3 in claims 1 and 8, all have absorption maxima at a wavelength over 450 nm, which is longer than the laser having an oscillation wavelength of 450 nm.

The Examiner has questioned whether 4-N,N-diethylamino-4'-nitrosodiphenylamine can sensitize the recording media, since 4-N,N-diethylamino-4'-nitrosodiphenylamine has an absorption maximum at 440 nm. Since claims 1 and 8 have been amended to limit the organic dye compound used in the optical recording medium as claimed to one "having an absorption maximum at a wavelength of more than 40 nm longer than 450 nm," it is self-evident that 4-N,N-diethylamino-4'-nitrosodiphenylamine is no longer included in the dyes claimed herein.

Claims 1-4, 7-11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al. and Usami et al. in view of Nanba and Kanno, US 6,063,467 and further in view of Ootaguro et al., US 5,318,882.

This rejection is respectfully traversed. It is respectfully submitted that the combination of Maeda, Usami, Nanba, Kanno and Ootaguro does not teach or suggest an optical recording medium which:

- i. uses a laser with an oscillation wavelength of about 405 nm as writing light,
- ii. uses an organic dye compound having an absorption maximum at a wavelength of more than 40 nm longer than 450 nm,

- iii. has a recording capacity of over 15 GB per side when formed into a disk 12 cm in diameter,
- iv. writes information by forming minute pits with a pit/groove width of below 1 micron/pit at a track pitch of below 1 micron, and
- v. uses an organic dye compound represented by any one of Formulae 1 to 3 and includes a light-resistant improver.

Accordingly, it is believed that claims 1, 7-8 and 14 define allowable subject matter.

Claims 1, 2, 4, 7-9, 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda and Usami in view of Nanba, Kanno, GB 2,329,751 and Ootaguro.

This rejection is respectfully traversed. Kanno discloses, at pages 5-9. An optical recording medium using styryl dyes that are suitable for a laser having an oscillation wavelength of 500 nm to 700 nm. Kanno, however, teaches nothing about an optical recording medium that uses a laser with an oscillation wavelength of about 405 nm as writing light and having a recording capacity of more than 15 GB per side when formed into a disk 12 cm in diameter. There is nothing in any of Maeda, Usami, Nanba or Ootaguro that supplies the deficiencies in the Kanno disclosure.

Appln. No. 09/928,833
Amd. Dated June 7, 2007
Reply to Office Action of February 15, 2007

In view of the above, it is respectfully submitted
that the claims are now in condition for allowance, and
favorable action thereon is earnestly solicited.

Respectfully submitted,

BROWDY AND NEIMARK, P.L.L.C.
Attorneys for Applicant

By: /Anne M. Kornbau/
Anne M. Kornbau
Registration No. 25,884

AMK:srd
Telephone No.: (202) 628-5197
Facsimile No.: (202) 737-3528
G:\BN\S\SUMA\MATSUI5\pto\2007-06-07 AMD.doc

Table

Chemical Formula	λ_{max} in methanol solution (nm)
19	767
20	544
21	545
22	545
23	502
24	543
25	547
26	546
27	525
28	525
29	530
30	536
31	525
32	540
33	550
34	around 580
35	524
36	around 580
37	around 580
38	around 580